Abstract

This invention relates to functional breakable crosslinkers and polymer networks made of functional breakable crosslinkers. The polymer networks show high selectivity or molecular recognition and are suitable for the use in separation materials and sensors. A representative functional crosslinker is 2,3-Dihydroxy-N,N,N'N'-tetramethyl-N,N'-bis{3-[(2-methylacryloyl)amino]propyl}-1,4-butanediaminium dihalide ("Imprinter-Q"). Imprinter-Q comprises three functional parts: two polymerizable double bonds; two cationic groups; and a 1,2-glycol link between the cationic groups that is easily cleavable. Imprinter-Q can be polymerized with other polymerizable monomers and cross-linkers to obtain polymer networks. After breaking the 1,2-glycol bond, the polymer network has receptor sites that present high affinity for divalent anionic molecules or ions.